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FACTORS AFFECTING THE OUTCOME OF TREATMENT OF PULMONARY TUBERCULOSIS IN SUB-OPTIMAL CONDITIONS:

An 18-month Follow-up of 224 Patients

By

D. H. SHENNAN and M. LOUISE WESTWATER.

frequency of the Duffy (Fy^a) gene among African populations. Matznetter and Spielmann (1969) obtained a figure of 0.18 per cent. in Moçambique Africans; we found it to be 0.96 per cent. in the Rhodesian Africans we tested, whereas Shapiro (1953) found a frequency of 6.07 per cent. in the South African Bantu. Were a rise in the gene frequency for Fy^a in the South African Bantu due to Caucasoid gene insertions, it might be expected to be evenly distributed in the coastal areas of both South Africa and Moçambique. That this is not so may be some evidence, therefore, that the gene insertion is of Hottentot origin (15 per cent. — Zoutendyk, Kopec and Mourant, 1955) or Bushmen origin (8 per cent. — Zoutendyk, Kopec and Mourant, 1953).

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Medical Education in South Africa*

BY

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The object of medical education is to provide men and women trained to a standard adequate to meet the needs of a medical service to the community which it serves. In a young country like South Africa it is relatively easy to study the development of medical education over the last 200 years. It is without embarrassment that I must point out that the early history of medical education in South Africa is virtually the history of the establishment of the Faculty of Medicine in the University of Cape Town.†

In the early days medical services in the time of John Company were rendered to servants of the company by officials of that company. As we know, Jan van Riebeeck, the first Governor at the Cape, was himself a surgeon. As a Director of Hospital Services of the Cape Provincial Administration said in one of his annual reports, there are very few countries which owe their origin to the need for a hospital. In a later phase the army provided medical services to the troops and, at the same time, rendered services to civilians who might be in need of medical attention. Many army medical officers chose to retire in South Africa and thus the nucleus of the medical profession was founded. (The interesting and controversial Dr. James Barrie was one of these.) In addition, men came out from overseas to set up in practice. In the middle of the nineteenth century South African-born young men proceeded overseas with the express purpose of studying medicine, qualifying as medical practitioners and returning to South Africa.

At first Leyden was the most popular medical school, but Edinburgh was to increase in popularity and by 1860 the bulk of medical students from the Cape were proceeding to the Scottish universities. By 1880 Edinburgh had completely replaced Leyden as a school of choice; of the 60-odd practitioners in the Cape, 25 were Edinburgh trained and only five graduated at Leyden. Nevertheless, the influence of Leyden continued to be felt for many years. In 1887 there were 70 South Africans studying in Edinburgh and in 1897 there were 60 South Africans in Edinburgh and about 40 studying elsewhere in Britain and on the Continent. A very significant event in the nineteenth century was the foundation of the South African Medical Society in 1827. This was virtually the forerunner of the present Medical Association of South Africa.

Another major advance in the nineteenth century was the establishment of the first civilian hospital in the Cape Colony in 1818, when a hospital was opened to the public and named

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† For the historical references I have drawn heavily on information contained in *In the Shadow of Table Mountain*, by Professor J. H. Louw, to whom due acknowledgment is made.

(after Lord Charles Somerset) the "Somerset Hospital" or, to give it its full title, "The Somerset Hospital and Lunatic Asylum for the Reception of Merchant Seamen, Slaves and Paupers". With the passage of time this hospital was declared inadequate and on the 18th August, 1859, the Governor, Sir George Grey, laid the foundation of the new Somerset Hospital. This hospital was completed in 1862 and built at a cost of £25,000.

Although it had been the intention of the Government of the day to demolish the old Somerset Hospital it was, however, re-occupied from the beginning of 1863, and "such cases of lunacy as are inadmissible to the new hospital, also lepers and paupers admitted". Thus the old Somerset Hospital was launched on its long career as a repository for the chronic sick of the Cape. By 1887 it housed twice as many patients as the new hospital. Even in my day as a medical student, i.e., the early thirties, we were shown the chronic sick at the old Somerset Hospital while doing our clinical training at the new Somerset Hospital.

Agitation for medical education in South Africa started in mid-century. Names associated with the agitation include that of Dr. Ebden and the famous newspaperman, John Fairburn. As a result of the rapid development of medical practice at the Cape in the closing years of the century, the local practitioners who, until that time, were forced to receive their education overseas became acutely conscious of the need for a medical faculty in "the shadow of Table Mountain". Among them were men of the calibre of E. B. Fuller, W. J. Dodd, C. F. K. Murray, Neil Herman and Sir J. H. Meiring Beck, all of whom contributed a great deal to the later establishment of a faculty.

Representations were made to the South African College, but it was only in 1890, that the Council of the South African College felt the ground firm enough beneath its feet to approach the University of Edinburgh with a humble petition that it would recognise the South African College for scientific work and laboratory work for medical purposes as far as the chemistry department was concerned, then the strongest course at the college. This may be regarded as the first practical move in the direction of medical education in South Africa. Edinburgh, however, showed herself aloof. Representations continued to be made to the Scottish universities, but it was not until 1904 that the recognition of the teachers of zoology, physics, chemistry and botany by the Scottish universities was received. It was thus in that year that the South African College was in a position to start a full first year medical course and eight students were registered as medical students in that year, the first to be so registered in South Africa. At the beginning of 1906 the first year medical courses were fully recognised in the United Kingdom.

The chairs of anatomy and physiology were advertised in 1911, and during the course of that year South Africa's first two "medical professors" arrived in Cape Town. This led to the immediate extension of the medical course to a second year. Great difficulty was experienced in providing suitable accommodation for the second year students as well as suitable dissection material. However, the erection of a building for the new medical department was begun in 1910 and, with the passing of the Anatomy Act in 1911, it became legal to dissect human bodies (Fig. 1). In 1912 the anatomical and physiological laboratories were officially opened.

The First World War of 1914-18 had far-reaching effects on the world in general; medical education in South Africa was no exception. Despite the war, in May, 1916, by Acts of Parliament charters were given to the South African and Victoria Colleges as the University of Cape Town and the University of Stellenbosch respectively with effect from 2nd April, 1918, and on 5th April, 1918, the University of Cape Town was officially inaugurated and with it a faculty of medicine, the first in

Fig. 1—Professor R. B. Thomson and the first three anatomy students.
Standing from left: William Waddell, de Vos Meiring, D. J. van Schalkwyk.

(Reproduced from *In the Shadow of Table Mountain* with the kind permission of the author.)

the country. In 1920 the medical faculty welcomed its first clinical professors, thereby becoming the first full faculty of medicine in Africa south of the Sahara.

Nine years after the establishment of the chairs of anatomy and physiology the medical faculty had become complete and the University of Cape Town could offer a full course for the degrees of M.B., Ch.B. Graduation Day on the 19th December, 1922, was an historic date in the progress of the medical school and of medical education in South Africa. It witnessed the capping of the first two medical graduates of a South African university, namely, Louis Mervish and J. B. Solomon, and this historic occasion laid the cornerstone of medical education in South Africa.

It is remarkable to think that in something like only 50 years South Africa is now training within its borders over 75 per cent. of the medical practitioners on the register of the South African Medical and Dental Council. In round figures, 20 per cent. of the remainder trained in the United Kingdom and five per cent. elsewhere. I am informed that according to a recent estimation, 36 per cent. of the medical practitioners on the register of the Rhodesia Medical Council trained in South Africa. Trained medical personnel is a precious commodity — in any political situation difficult to import.

The South African Medical and Dental Council was established in terms of the Medical, Dental and Pharmacy Act of 1928* and is responsible for maintaining registers (Fig. 2) of medical students, interns, medical practitioners, specialists and professions supplementary to medicine. It is this Council which frames the regulations under the Act which have to be satisfied by persons who wish to be registered as medical practitioners in

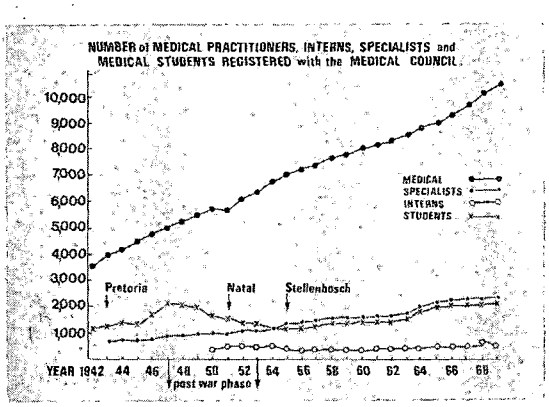

Fig. 2—Medical practitioners, interns, specialists and medical students registered with the S.A. Medical and Dental Council (compiled from annual reports of the Registrar).

NUMBER of MEDICAL STUDENTS REGISTERED with the COUNCIL—DECEMBER 31st. 1969.

UNIVERSITIES of	CAPE TOWN	RAND	PRETORIA	NATAL	STELLENBOSCH	TOTAL
2nd YEAR	193	188	210	91	79	761
3rd YEAR	162	129	193	56	67	607
4th YEAR	120	101	167	54	75	517
5th YEAR	138	109	159	37	50	493
6th YEAR	126	110	114	36	53	439
TOTAL	739	637	843	274	324	2817

Fig. 3—Medical students registered with the S.A. Medical and Dental Council (compiled from the annual report of the Registrar).

the Republic of South Africa. The degrees, diplomas or certificates which entitle persons to registration as medical practitioners are listed. Provision also exists for the registration of persons whose qualifications are recognised by the statutory registering bodies of foreign countries with whom the Republic enjoys either full reciprocity, e.g., the United Kingdom, or limited reciprocity, e.g., the Netherlands and the Federal Republic of Western Germany. In addition, provision is made for the registration of certain categories of foreign medical graduates who are engaged in, for instance, medical missionary work, scientific work and research, or who, under certain circumstances, are employed in a full-time capacity by the State. The Medical and Dental Council is the statutory body charged with the control of standards of medical education.

Every medical student is required to be registered with the Council (Fig. 3). This registration takes place at the commencement of the second year of study and affords the medical student legal status. The basic requirements for registration are laid down by the Council and, briefly, the student is required to have passed the examination of the Joint Matriculation Board (or to have been granted exemption from that examination) and to have passed mathematics at that level. He is further required to have attended courses at a university and passed university examinations in physics, chemistry (full courses), botany, zoology (half courses) or, in place of the courses in botany and zoology, a full course in biological sciences.

It should be noted that at present there is no provision made for the exemption of a student from the first professional examination by reason of having passed "A" level examinations in

* The Rhodesian Medical Council was established in the same year.

physics, chemistry, and biology, as is the case in the United Kingdom. Further, the Council lays down that the course of training must extend over a period of five years from the date of registration as a student with that Council and that the last three years must be engaged in clinical study at the university or medical school in the country or State in which the degree, diploma or certificate was granted. No person may be registered as an intern or medical practitioner until he has attained the age of 21.

To secure full registration as a medical practitioner a full year of internship (pre-registration year), after graduation at an approved institution, is required by the Council under conditions laid down by the Council; the distinction must now be drawn between graduation and qualification.

Five medical schools are at present recognised by the Council in South Africa, while a sixth has recently been recognised and this year, 1970, accepted first year medical students. The schools of medicine in the Republic of South Africa are in the University of Cape Town, founded 1918; in the University of the Witwatersrand, founded 1922; in the University of Pretoria, founded 1943; in the University of Natal, founded 1951; and in the University of Stellenbosch, founded 1955; and, as I have said, the University of the Orange Free State is accepting medical students for the first time in 1970 (Fig. 4).

The Government has announced its intention of establishing a further medical school in Natal and a policy statement has been made that yet another medical faculty will be established at the University of the Western Cape. Dates for the latter two have not yet been made known.

Thus tremendous strides have been made in the post-war years in regard to undergraduate medical education, and the number of persons seeking to enter medical faculties now greatly exceeds the

SCHOOLS OF MEDICINE IN THE REPUBLIC OF SOUTH AFRICA

NAME OF INSTITUTION	FACULTY OF MEDICINE FOUNDED	YEARS OF STUDY REQUIRED TO QUALIFY	MEDIUM OF INSTRUCTION
University of Cape Town Cape Town	1918	6	English
University of Witwatersrand Johannesburg	1922	6	English
University of Pretoria Pretoria	1943	6	Afrikaans
University of Natal Durban	1951	6 or 7	English
University of Stellenbosch Stellenbosch	1955	6	Afrikaans

University of O.F.S. has accepted 1st year Medical students as from 1970.

Fig. 4—Schools of Medicine in the Republic of South Africa.

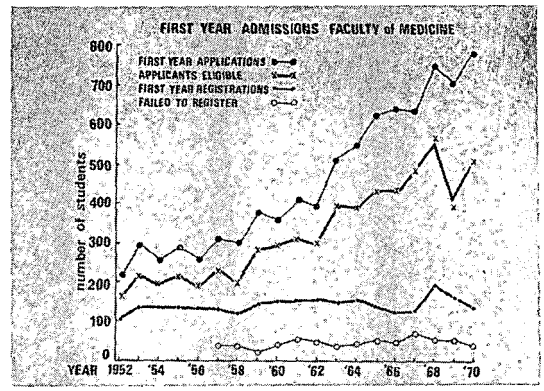

Fig. 5—First year applications and admissions to Faculty of Medicine, University of Cape Town. (Note: 1968 saw a change in policy regarding compulsory military training.)

number that faculties are able to accommodate (Fig. 5). Very interesting observations have been made on the manpower situation. There is no doubt that the manpower in South Africa is strained to its utmost and that it would be most unwise to unilaterally increase the number of medical practitioners out of proportion to the other skilled professions, vocations and trades.

The post-war years have seen a tremendous increase in the postgraduate education of medical practitioners. The introduction of a Specialist Register (Fig. 6) by the South African Medical and Dental Council made it incumbent on the universities to provide adequate postgraduate training to enable persons to meet the requirements of the Specialist Register.

These requirements are, briefly, evidence of a higher qualification, two years' experience (after the intern year) in general medicine, general surgery, general practice or a combination thereof, and three years as the holder of approved appointment in a teaching hospital under the direction of the clinical head of that department. The advent of the Specialist Register was a tremendous impetus to the postgraduate education in South Africa. Teaching posts in a teaching hospital are much sought after, with a consequent increase in the level of treatment afforded the patient; research has been stimulated by the university requirements for various degrees.

In 1948, when the Specialist Register was first opened, there were very few opportunities of postgraduate education in South Africa leading to an acceptable higher qualification. Universities were called upon to introduce tests of competence. This led to the Master of Medicine degree, which has led to much confusion within and without the Republic. As far as the University of Cape Town

REGISTERED SPECIALISTS

31st December	1959	1969	31st December	1959	1969
ANESTHETICS	134	293	PHYSICAL MEDICINE	15	16
DERMATOLOGY	31	39	PLASTIC SURGERY	15	22
MEDICINE	191	307	PSYCHIATRY	69	129
NEUROLOGY	31	36	RADIOLOGY	75	64
NEURO SURGERY	18	34	ELECTROTHERAPISTS	35	19
OBSTETRICS & GYNAE	136	248	DIAGNOSTIC RAD.	38	148
OPHTHALMOLOGY	101	135	THERAPUTIC RAD.	5	17
ORTHOPAEDICS	68	132	SURGERY	179	313
EAR NOSE THROAT	69	98	THORACIC SURGERY	19	26
PATHOLOGY	84	157	UROLOGY	37	56
PAEDIATRICS	72	142	VENEROLOGY	18	9

TOTALS	1959	1969
Specialiasts	1505	2505
Medical Practitioners	7788	10497

Fig. 6—Specialists registered with the S.A. Medical and Dental Council (compiled from the Annual Report of the Registrar).

is concerned these degrees were introduced as an expedient to meet an existing situation. The university feels that tests of competence are outside of the function of a university, which should confine itself to teaching and research, awarding postgraduate degrees such as M.D., Ch.M. in recognition of the latter.

The advent of the South African College of Physicians, Surgeons and Gynaecologists has introduced a further examining body in the postgraduate field. The college has made a slow but steady start and is gaining momentum on a sound basis. The qualifications issued by this college are acceptable to the Council as higher qualifications. The college may well, in due course, fill the role of an examining body testing professional competence, relieving universities of this responsibility.

The basic undergraduate teaching requirements are constantly under review. As I have said, the Medical Council prescribes a minimum curriculum. At present the Council is actively engaged in investigating a revision of the minimal requirements. Thus far the S.A. Medical and Dental Council has not seen fit to go as far as the General Medical Council of the United Kingdom, but it is the current policy to leave as much as possible to the universities and to avoid hard and fast rules and regulations, all provided an adequate standard is maintained. To this end the Council has the right to inspect all medical examinations. The Council regularly exercises this right by inspecting the preclinical and clinical examinations of each of the medical schools in turn annually.

As far as postgraduate education is concerned, the liaison between the various provincial administrations who are responsible for the curative services to the community and the universities responsible for teaching and research is very close indeed, and it is in this manner that the patient receives highly skilled treatment, while at the same time the university, through its medical faculty, is able to conduct research and teaching. Joint staffs, i.e., between the universities and the provincial administrations, exist in one form or another in each of the three provinces in which medical schools offering clinical teaching have been established.

Paramedical services training needs are now being met by the introduction of training courses in physiotherapy, occupational therapy and many others in the universities and in the provincial administrations. This is going to throw an increasing burden on the teaching facilities as the need for paramedical services increases.

It is a moot point as to who is responsible for the training of paramedical personnel. It is difficult to concede that the professional training of paramedical personnel is an academic discipline (there are many of the purists that contend that even medical training is "vocational" and not "academic"). At the same time, it is difficult to imagine that adequate medical teaching in the basic sciences as well as in the clinical aspects of these professions could be undertaken at anything but medical schools. Small classes are wasteful or hard to come by teaching staff. Academic teachers do not like teaching at below degree standard. The consequence is combined classes, to conserve staff, being taught at a standard where the higher has to include the lower. Degrees in physiotherapy, occupational therapy, logopaedics, etc., are being offered by three of the five medical schools in South Africa. There is no doubt that the other two, which includes the University of Cape Town (which offers diplomas), will have to fall into line.

So much for the present, where it would seem that undergraduate, postgraduate and paramedical education is on a sound footing; but what of the future? There is no doubt that far more attention will have to be given to continuing education. Whereas the object of undergraduate training some years ago could be summed up in the words "basic doctor", today he is being trained in the understanding of basic principles in medicine on which to add further knowledge. The problem now arises how to make opportunities available to our medical practitioners to obtain this further knowledge.

Postgraduate refresher courses at all levels are being offered at all medical schools. But this is only scratching at the surface; it is indeed a privileged medical practitioner who can leave his practice to attend these refresher courses. The number of places that can be made available on

the courses must of necessity be limited: for example, we do not like to have more than 44 attend our general practitioners course, i.e., four groups of ten, making provision for the few who regularly fail to register — a very small contribution to the 10,000 medical practitioners now on the register of the Medical Council.

During my recent visit to the United Kingdom I was very interested in the establishment of postgraduate medical centres. In terms of the Health Services and Public Health Act of 1968, the Secretary of State is empowered to arrange postgraduate study and training facilities for staff working in the National Health Service. A typical postgraduate medical centre is located in a hospital or in a hospital grounds, whether or not the hospital is associated with a medical school. As at 1st January, 1969, postgraduate medical study and training facilities were available at nearly 300 places. These included about 70 purpose-built centres; the remainder were making use of existing premises.

These postgraduate medical centres are virtually "medical clubs" with a library (under the control of a librarian on whom the success or otherwise of the centre will rest), seminar rooms, lecture theatres, display panels and provision for light refreshments, particularly at midday, and in association with set meetings. At each of the centres I visited I was struck by the enthusiasm of the persons concerned with the administration of these centres.

It does seem to me that in South Africa, and in due course Rhodesia, with its great distances and its steadily increasing hospital facilities, the need for such postgraduate medical centres is very real indeed. With the co-operation of a medical school through its library, teaching staff, etc., such centres attached to hospitals could bring continuing education to the most outlying medical practitioner. I only hope that I am able to convince the authorities of the value of such postgraduate medical centres and to see one established, preferably in association with my own medical school, in the short time that remains for me in my present position. To solve the problem of continuing education is the immediate task confronting all medical educationists.